

## Study on 50, 75 and 150um thick p-type Epitaxial silicon pad detectors irradiated with protons and neutrons

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A study on p-type epitaxial silicon pad detectors with thicknesses 50 and 75 um is performed after proton irradiation up to  $2.88 \times 10^{15}$  p/cm<sup>2</sup>.

Samples with thickness 150 um are also studied, after proton and neutron irradiation up to  $1.73 \times 10^{15}$  p/cm<sup>2</sup> and  $1 \times 10^{15}$  n/cm<sup>2</sup> respectively.

Capacitance, leakage current and charge collected are measured as a function of biasing voltage. It is also used the transient current technique(TCT).

For proton irradiation, it is found that the variation of the effective space charge density with fluence depends less on thickness in p-type than in n-type.

TCT measurements allow to verify a space charge sign inversion from negative to positive when the material is irradiated with protons,

as well as to get an estimation of the trapping times for holes. For a thickness of 150um the charge collected doesn't drop down at low fluences as it does for n-type.

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